AN

INTERNSHIP REPORT

ON

IOT BASED WEATHER MONITORING SYSTEM PROJECT

BY

KAMAL ACHARYA

(Tribhuvan University)

Date: 2025/04/10

“IOT Based Weather Monitoring system using Blink App”

Abstract

The Internet of Things (IoT) is a latest concept of relating physical computing devices or any other objects to internet and can communicate with each other. Each object is provided with unique identifiers and the ability to transfer data over internet network without human intervention and machine interaction. The project targets on a simple microcontroller, Node MCU with connection to the wireless weather monitoring system, WiFi-WeMos ESP8266 which monitor weather condition using three sensors such as temperature, rain and carbon monoxide sensor. It then displays all data in the Blynk application. The project have been developed by using Node MCU Microcontroller, WiFi-WeMos ESP8266, DHT 11 temperature and humidity sensor, rain sensor and MQ-7 Carbon monoxide sensor. It is suitable for monitoring weather in any place and any time.

Introduction

Weather monitoring is an important aspect in many situations. For example, the weather conditions are need to be monitored in order to maintain the healthy growth in plants. Other than that, it also needed for ensuring the safe environment in city or suburban. The people who want to go to city can easily know the weather on that time and will plan their travel easily. Today, there are some announcement about the weather from radio or television but at a certain time only and not efficient anymore. In modernization world, technology is important for human to facilitate everyday life. Hence, the technology is used in this project to help the people to know the condition of weather at a certain place by only using fingertips. The weather monitoring system can be categorized into wired or wireless system. In wireless communication, the connectivity will be more convenient and user-friendly. Thus, weather monitoring system would not need the responsible person to be presence at the location. Wireless communication also is the transfer of information or data over a distance without the use of wires from the transmitter to the receiver. The distance of transferring data can be short or long. The weather monitoring system will collect all the data and will send to the application known as Blynk.

Scope

The Node MCU microcontroller is the main component in the system that is connected to all the components as shown in the Figure. The sensors for the system are connected to the analog input of the Node MCU microcontroller. The Node MCU is also linked to the WiFi-WeMos ESP8266. All the collected data will be send to Blynk application.

ADVANTAGES:

- IOT weather mentoring system project using Node MCU is fully automated.
- It does not require any human attention.
- We can get prior alert of weather conditions
- The low cost and efforts are less in this system
- Accuracy is high.
- Self Protection
- Smart way to monitor Environment
- Efficient

APPLICATIONS:

- The weather forecasting plays very important role in the field of agriculture.
- It is also helpful at places like volcano and rain forests.
- It is quite difficult for a human being to stay for longer time at such places.

FUTURE SCOPE:

- One can implement a few more sensors and connect it to the satellite as a global feature of this system.
- Adding more sensor to monitor other environmental parameters such as CO2,Pressure and Oxigen Sensor

- In aircraft, navigation and military there is a great scope of this real-time system.
- It can also be implemented in hospitals or medical institutes for the research & study in "Effect of Weather on Health and Diseases", hence to provide better precaution alerts.

Limitations of the existing

Weather Monitoring System

a.) Existing weather monitoring systems that are used generally consist of unconventional and heavy machinery that consists of number of moving parts that require constant maintenance and need to be monitored and changed frequently.

b.) Power requirements are one of many major constraints as these instruments are generally sited far from main power supply. This made instruments costly.

c.) Thermometers to measure external Temperature; But accurate is still not updated and continuously needs to be checked regularly for any change in temperature.

d). Data collected by the instruments needs to be manually transferred from the system to a Laptop or computer via a cable.

f.) Existing systems occupy a lot of space hence making it difficult to install them in remote location and places where space is limited.

g.) The instruments used are expensive and already have high cost of installation and maintenance.

h.) The current system faces problems like delay in caution people about worst condition of weather and instant overcast weather.

OBJECTIVE

The main objective of this project is to originate electronic device or network that can capture and restore temperature and humidity and after that send data to the cloud or website for its analysis. Here we can use the Node MCU a microcontroller for the simple brain of the system. When we use the Node MCU as a microcontroller, we need a Wi-Fi module to establish your Internet connection. And the DHT sensor, which (digital humidity sensor) can detect differences in temperature, humidity and humidity at a certain location, must be integrated into the system. The sensor continuously monitors temperature changes and sends data to the microcontroller. The microcontroller transfer the data for its storage and visualization to cloud. We can also use IOT platforms such as Blink App IoT to collect data into the cloud for analysis. This system can then be customized to create good animations such as tweets or phone calls, or turn on a device when the temperature/humidity or other parameters are below a certain threshold.

Literarture Survice

In today's world many pollution monitoring systems are designed by different environmental parameters. Existing system model is presented IOT based Weather monitoring and reporting system where you can collect, process, analyze, and present your measured data on web server. Wireless sensor network management model consists of end device, router, gateway node and management monitoring center. End device is responsible for collecting wireless sensor network data, and sending them to parent node, then data are sent to gateway node from parent node directly or by router. After receiving the data from wireless sensor network, gateway node extracts data after analyzing and packaging them into Ethernet format data, sends them to the server. Less formally, any device that runs server software could be considered a server as well. Servers are used to manage network resources. The services or information provided through the Internet that are connected through LAN and made available for users via smart phones, web browser or other web browser devices to make the system more intelligent, adaptable and efficient.

The monitoring of weather is really helpful in various applications like in critical scientific systems or for simulation purposes. In other fields like agriculture, disaster management and medical suited environments. Weather sensing is one of the major functions in aerospace applications to check suited weather environments of other planets too. For example, NASA Mars REMS(Rover Environmental Monitoring Station) for providing daily and seasonal reports. The need for this project came from the support of a fact of very low popular devices and instruments are available that can provide you live weather results. On top of that requirement of accessing it anywhere.

Weather forecast these days is unpredictable too be exact because of the climate changes drastically over weather. In cause of that, Weather Reporting System is mostly used tomonitor the continuously changing climatic and weather conditions over controlled areas likeshouse, industry, agriculture and etc. in real time monitoring. Internet of Things (IoT) platform use is Blink it's should be able displaying the weather parameters and the information will visible wherever in the world and it's also displaying on the OLED with two-way microcontroller communication via Wi-Fi hotspots. The condition of some particular place that be reported by satellite weather report system does not give the exact condition. However, the problem occurs when needed the accurate weather report for current time. With weather reporting system all weather parameters sensor will be controlled by ESP32 microcontroller as the server that will

send all the data collected by sensors to the database by Blink and will visible anywhere in the world and also display on OLED that use Wemos D1 mini as its microcontroller and a client. This data then will be compared with the weather forecast data and statistics made by forecast station. All data collected will be also saved in google sheet format by IFTT tool for easier to analyse the data. This system will monitor the changes of weather condition happening over the environment and then provides the users fastest way toaccess the information from anywhere.

IoT-Based Data Logger for Weather Monitoring Using Node MCU-Based Wireless Sensor Networks with Remote Graphical Application and Alerts

In recent years, the monitoring systems play significant roles in our life. So, in this paper, we propose an automatic weather monitoring system that allows having dynamic and real-time climate data of a given area. The proposed system is based on the internet of things technology and embedded system. The system also includes electronic devices, sensors, and wireless technology. The main objective of this system is sensing the climate parameters, such as temperature, humidity, and existence of some gases, based on the sensors. The captured values can then be sent to remote applications or databases. Afterwards, the stored data can be visualized in graphics and tables form.

In 2018, Reddy et al proposed a low-cost weather monitoring based on the internet of things technology. The proposed system used several electronic sensors for sensing the air conditions including hydrocarbons, sulfur dioxide, nitrogen oxides, and so on. In case of reception of the dangerous gas values, the system activated the warning alarm. Furthermore, it can communicate an Short Message System (SMS) message to final user. Finally, it was connected to distance database designed for storing the historical measurement. Afterwards, Kumari et al. proposed an intelligent environment monitoring system based on Android and the internet of things technology. The designed system is capable to measure some air, water, and soil parameters that are used to evaluate the environment. For these reasons, the system is equipped with various sensors that are connected to Rasberry Pi card. Upon getting the measured parameters, the card transfers their values to the remote database via wireless network. In 2019, Durrani et al. proposed a smart weather station for monitoring weather parameters. This system is equipped with various sensors that collect data from their location and then send them to the cloud. In addition, they can predict the future stations of weather by using machine learning algorithms.

There are possible to make the user-friendly live weather monitoring system using IoT technology. IoT is an Internet of things which capable of transferring data over a network without requiring human interaction

[1] With the development of a cloud-based system, the cloud platform can give better weather availability of data anywhere and anytime. The weather needs easy ways and new techniques for surveillance and management. Monitoring the weather parameter is required to assess the live condition of the weather to takes the right life action according to fetched data from the device.

[2] It is an embedded system which consists of webenabled smart such as processors, sensors and communication hardware, to fetch, transmit and work on available data they obtained from their weather. The IoT devices sent this processed data to the network gateway, and from there, it will be available to within network. But by designing such a system which also available on public Internet also is make more advantage to human life.

[3] Previously many of IoT based weather monitoring system design used third parties IoT platform such as Thing Speak. But we have designed our cloud-based server because of that anyone can easily access our web-based service or through android app [4].

INTRODUCTION TO SRS:

The introduction of the Software Requirements Specification (SRS) provides an overview of the entire SRS with purpose, scope, definitions, acronyms, abbreviations, references and overview of the SRS. The aim of this document is to gather, analyse, and give an in-depth insight of the complete “petiside spray using IOT” by defining the problem statement in detail. The detailed requirements of the Indian automobile buying behaviour – user related functions are provided in this document.

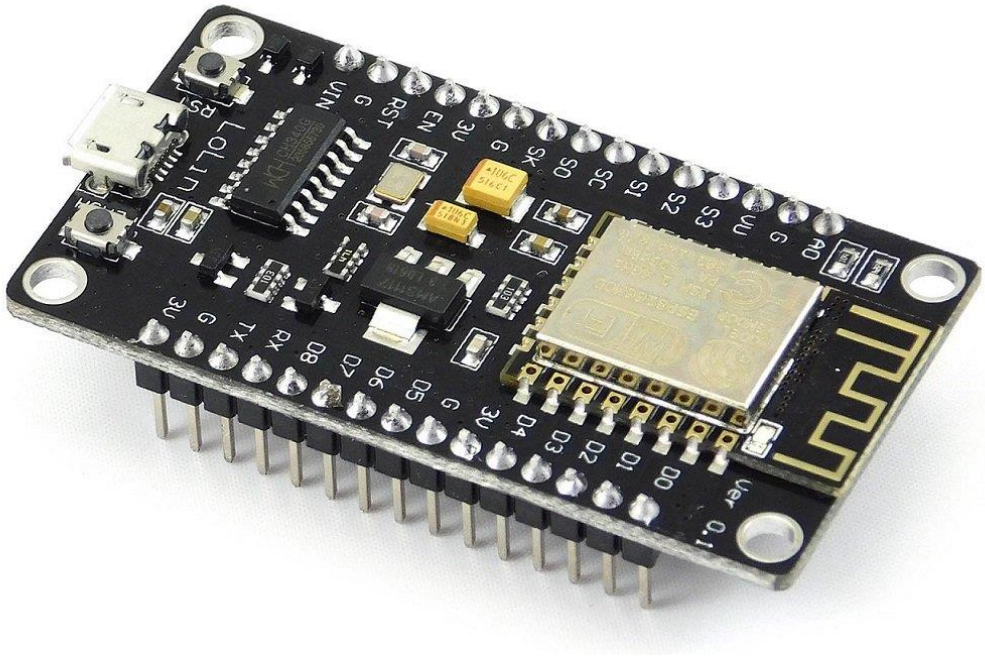
PURPOSE:

The Purpose of the Software Requirements Specification is to provide the technical, Functional and non-functional features, required to develop a web application App. The entire application designed to provide user flexibility for finding the shortest and/or time saving path. In short, the purpose of this SRS document is to provide a detailed overview of our software product, its parameters and goals. This document describes the project’s target audience and its user interface, hardware and software requirements. It defines how our client, team and audience see the product and its functionality.

Components required

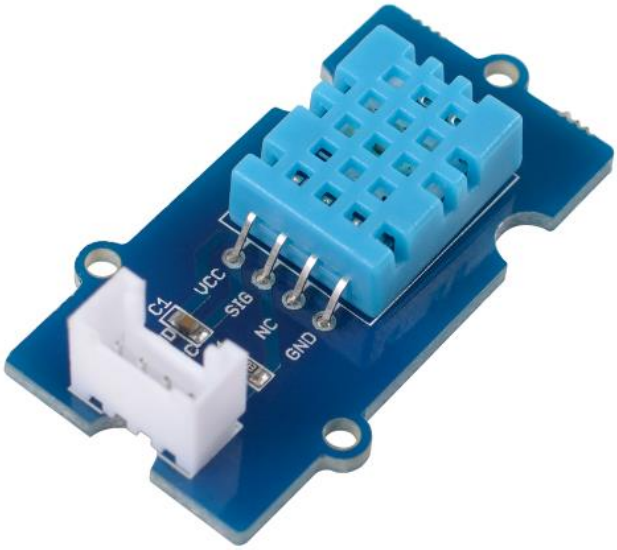
Microcontroller: nodeMCU

It is an open sources firmware and development kits to build IoT products. It includes firmware that run on ESP8266 WiFiSoC and hardware that has an ESP-12 module. The kit has analog (A0). It also has digital (D0-D8) pins on the board. It even assists serial ports communications such as SPI, UART, I2C etc.



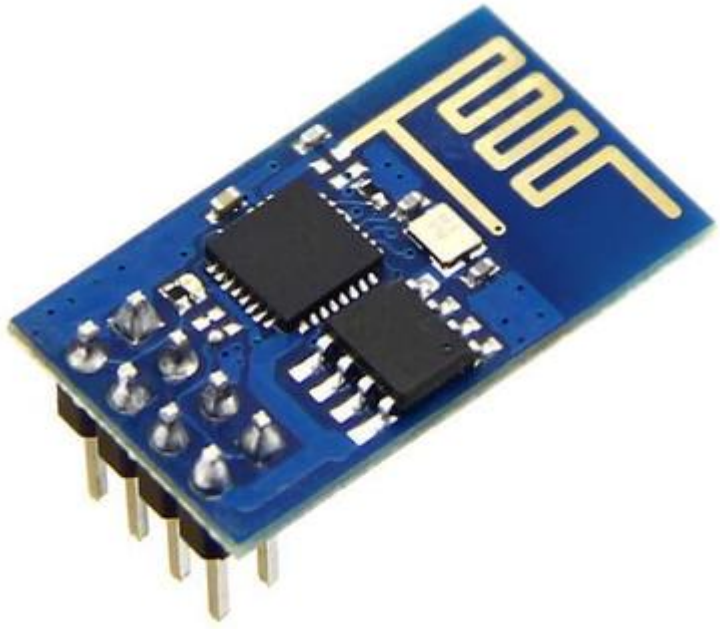
Temperature & Humidity Sensor:

This DHT11 Temperature and Humidity Sensor features digital signal output .It is integrated with a high-performance 8-bit microcontroller. Its technology ensures the high reliability and excellent long-term stability. It has excellent quality, fast response, anti-interference ability and high performance. Each DHT11 sensors features extremely accurate calibration of humidity calibration chamber. The calibration coefficients stored in the OTP program memory, internal sensors detect signals in the process, we should call these calibration coefficients. The single-wire serial interface system is integrated to become quick and easy. Small size, low power, signal transmission distance up to 20 meters, enabling a variety of applications and even the most demanding ones. The product is 4-pin single row pin package. Convenient connection, special packages can be provided according to users need.



WiFi Module:

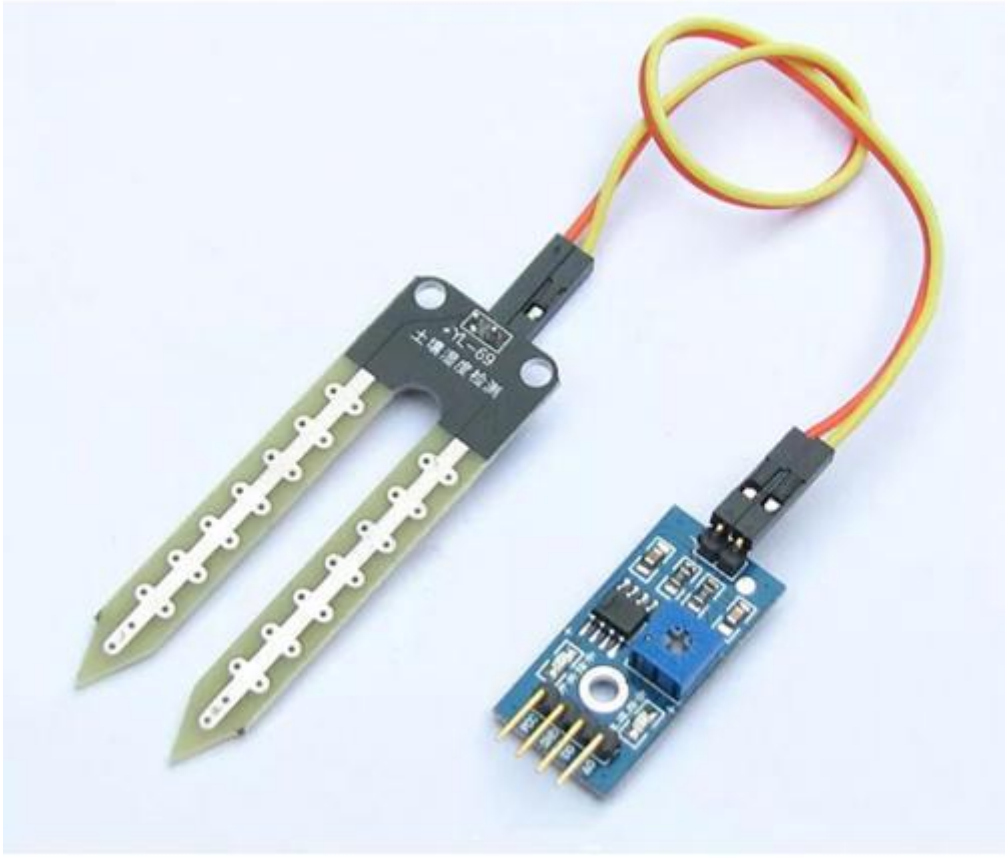
The Node MCU WiFi is an Node MCU with an integrated WiFi module. The board is based on the ATmega328P with an ESP8266 WiFi Module integrated. The ESP8266 WiFi Module is a self contained SoC with integrated TCP/IP protocol stack that can give access to your WiFi network (or the device can act as an access point). One useful feature of Uno WiFi is support for OTA (over-the-air) programming, either for transfer of Node MCU sketches or WiFi firmware.



Rain level sensor: The rain sensor module is an easy tool for rain detection. It can be used as a switch when raindrop falls through the raining board and also for measuring rainfall intensity. The analog output is used in detection of drops in the amount of rainfall. Connected to 5V power supply, the LED will turn on when induction board has no rain drop, and DO output is high. When dropping a little amount water, DO output is low the switch indicator will turn on. Brush off the water droplets, and where restored to the initial state, outputs high level. A rain sensor or rain switch is a switching device activated by rainfall.

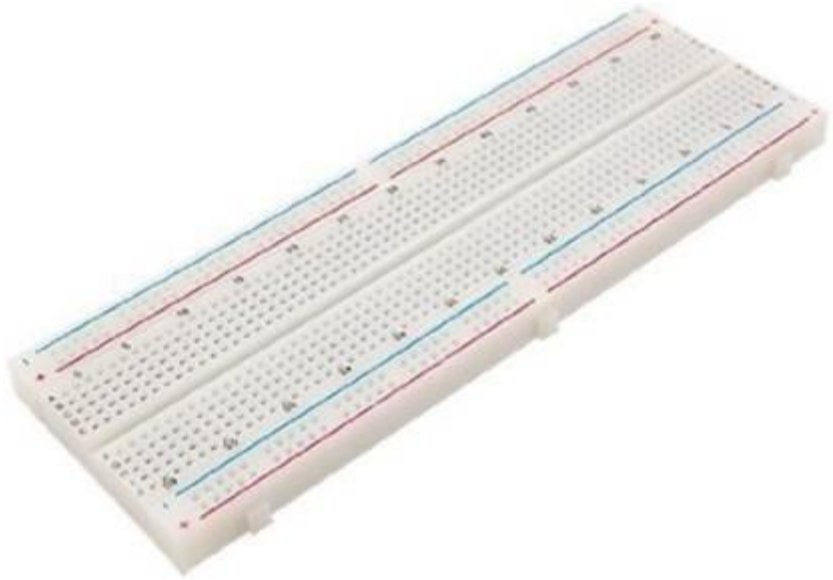
Soil Moisture Sensor:

Soil moisture sensors measure the contents in soil. Since the direct gravimetric measurement of free soil moisture requires removing, drying, and weighting of a sample, soil moisture sensors measure the volumetric water content indirectly by using some other property of the soil, such as electrical resistance, dielectric constant, or interaction with neutrons, as a proxy for the moisture content. The relation between the measured property and soil moisture must be calibrated and may vary depending on environmental factors such as soil type, temperature, or electric conductivity. Reflected microwave radiation is affected by the soil moisture and is used for remote sensing in hydrology and agriculture. Portable probe instruments can be used by farmers or gardeners.



BreadBoard

A breadboard is a rectangular plastic board with a bunch of tiny holes in it. These holes let you easily insert electronic components to prototype (meaning to build and test an early version of) an electronic circuit, like this one with a battery, switch, resistor, and an LED (light-emitting diode).



JUMP WIRE

Most important thing to remember is you must use solid-core **wire**, ideally 22 American **Wire** Gauge (AWG). Make sure you don't nick or cut the **wire**, because that could weaken it. Cut the other side to length, remember you'll need a little extra so that you can strip the other end too!

Applications Details

- Data are available on the android app.
- Prior weather alert or weather data can be possible
- Useful for the agriculture sector as a system is very cheaper, it can be affordable to Farmer
- By making an extensive network of this device, we can fetch real-time data of weather from a different location that can be available for free help purpose.

Hardware and Software Requirements

IoT Based Weather Monitoring System is required hardware as well as the software needed to implement. The details are given follow.

The things needed for this project are given below.

- Nodemcu ESP8266 12E Board
- BMP180 Pressure Sensor
- DHT11 Humidity Temperature Sensor
- Rain Sensor FC37
- 4.7K Resistors – 2
- Bread Board

Software Requirement:

- HTML File Library.
- Node MCU IDE
- Pressure Sensor BMP180 Library
- Humidity Temperature Sensor DHT11 ESP Library.

Functional Requirement

Algorithm for nodeMCU

Every C program need to have the main function. So does an embedded C program. Each main function contains 2 parts. A declaration part and an Execution part. The declaration part is the part where all the variables are declared. The execution part begins with the curly brackets and ends with the curly close bracket. Both the declaration and execution part are inside the curly braces.

Algorithm for Blynk

Step 1: Sketch > Include Library > Manage Libraries

Step 2: Wait for the download to finish

Step 3: In the "Filter your search" field, type "Blynk".

Step 4: Press Enter.

Step 5: Click on "Blynk"

Step 6: Click the "Install" button.

This part shall explain briefly and show the result that would get from the circuit implemented. All the hardware equipment is being assembly and several kinds of data in this project are analysed to ensure that the performance of the systems is stable and in desired condition. The result of the project are observed for analysis part. Based on the result and data analysis of the system, it can help user to analyse the performance of the system and check the system function. Thus, it able to monitor the weather in the outdoor environment.

Weather Monitoring System

For this project, the reading of temperature was taken in Celcius. It is because Celcius is the commonly used around the world. In Melaka, the average reading for temperature is 29°C. The average was suitable to the society to do some work and can visit the place safety without worrying the air quality.

Rain Sensor

During the system take the reading and place at Melaka, weather conditions are hot and humid. This system cannot be implemented because there was no rain during the week. Although, by using the application Blynk, the user can know the exact weather condition whether there is rain or not. The figure below shows the application detect the rain and not detect the rain. When the sensor detects the rain, the system on the application Blynk will change the notification to the red circle. Next when the sensor does not detect the rain, the system on the application Blynk will remain the notification with black circle. This notify the user to know whether it raining or not.

Soil Moisture Sensor:

Soil moisture sensors measure the contents in soil. Since the direct gravimetric measurement of free soil moisture requires removing, drying, and weighting of a sample, soil moisture sensors measure the volumetric water content indirectly by using some other property of the soil, such as electrical resistance, dielectric constant, or interaction with neutrons, as a proxy

for the moisture content. The relation between the measured property and soil moisture must be calibrated and may vary depending on environmental factors such as soil type, temperature, or electric conductivity. Reflected microwave radiation is affected by the soil moisture and is used for remote sensing in hydrology and agriculture. Portable probe instruments can be used by farmers or gardeners.

In order to develop this project "Weather Monitoring System", it is divided by two sections that are software and hardware development. For the software development, many researches have been done. The programming by using the Node MCU compiler is the most complicated part of this project. There were a lot of problem that have been facing. Error always pop up every time the program is executed. However, all the problems are solved after the errors have been found. For the hardware development, there are many problems too. Sometimes the sensor does not sense the condition. This problem happens when the connection of the wire was not fully connected or loose. Before running the system, it needs to check all the wires are tight and see if any of the wires are not connected.

The system provides a low power solution for monitoring weather and environment. The monitoring system has been tested in outdoor environment and successfully updated data from sensor. The data will be used for various type of analysis and it can be shared to other people or users. The project has the potential to be implemented for monitoring the developing cities and industrial zones especially for pollution monitoring. In order to protect the public health from pollution, the system also able to provide an efficient and low cost solution for the authority. It also suitable for continuous monitoring of environment in the future.

Temperature Sensor

A temperature sensor is a device used to measure temperature. This can be air temperature, liquid temperature or the temperature of solid matter. There are different types of temperature sensors available and they each use different technologies and principles to take the temperature measurement

As for conclusion the MQ135 sensor and Rain sensor is divided to three part for the results. The results will show the characteristic of sensor data for actual condition state which is to configure the sensor data value.

For MQ135 sensor;

- For analog value more than > 400 it states that the air quality is not good.

- For analog value in between 250<a<400 the air quality is fair.
- And for analog value below or less than < 250 the air quality is good.

For Raindrop sensor;

- When the analog value goes up to >800 the actual condition is No Rain.
- If the analog value down to <800 the actual condition is Rainy.
- And if analog value below <300 it was Heavy Rain in actual condition.

Blynk display sensor data

Another IoT tools that can display sensor data via wireless communication is Blynk app. This

application can do anything that relate to IoT development. In order to make this weather reporting IOP Conf. Series: Materials Science and Engineering 917 (2020) 012032 IOP Publishing doi:10.1088/1757-899X/917/1/012032 15 system can display sensor data and visible anywhere around the world this app has been built. The sensor data completely shown on Blynk app.

PERFORMANCE ANALYSIS

We have designed all the modulesas well as each and every component were assembled. The main thing that is testing of each module carried out successfully. The readings of every sensor were effectively retrieved in a easy environment and stored in files. The files updated automatically to cloud. Then we plot Graphical charts using the data which provide a nice analytical pattern of weather based on readings of sensors. In this way the phase of testing completed. This carries out in a very disciplined manner. So,we have to conduct some more same kind of experiments to real weather conditions. Here we havean IOT based project, which is a weather monitoring system that help in accessing different weather parameter remotely over Blink website or using an mobile application while connected to internet. In this modern time, we are highly dependent on growing technology. Our project uses microcontroller (Node MCU), WIFI module and different sensors i.e. DHT11, light sensor etc. The system was at the first time when different sensors were mounted over to the Node MCU and breadboard. The code upload time was also comparatively higher at the beginning than in the last phases. DHT humidity sensoris good in passingsignals.

Non-Functional Requirements

Availability

This application is compatible with region. This application helps to user send different type of soil view the response.

Maintainability

The project is developed using an Open source tool and is easy to maintain. The software used for the development of the applications are free so there is no necessary to pay and no maintenances cost.

Security

As the systems all the data are dumped at the server side the server provides the security to the unauthorized access of data.

Reliability

Reliability is a requirement about how often the software fails. The measurement is often expressed in mean time between failures. The definition of a failure must be clear. Also, don't confuse reliability with availability which is quite a different kind of requirement. Be sure to specify the consequences of software failure, how to protect from failure, a strategy for error detection, and a strategy for correction.

Simplicity

The project is driven by a simple user interface which helps to interact easily with application and easy to remember. Application builds by using bootstrap technology hence it compatible for all devices.

System Design

5.1 Introduction

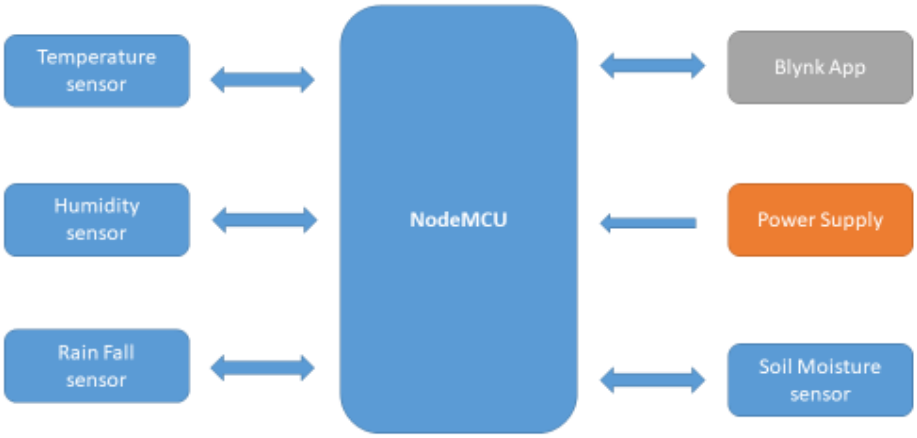
The Software Design Document is a document to provide documentation which will be used to aid in software development by providing the details for how the software should be built. Within the Software Design Document are narrative and graphical documentation of the software design for the project including use case models, sequence diagrams, collaboration models, object behavior models, and other supporting requirement information.

5.1.1 Purpose

The purpose of Software Design Specification (SDS) document is to specify a high level view of the architecture of our system, and on the interaction between the user and the system. And another purpose is on detailing a low-level view of each component of the software and how the components interact with each other.

This document's purpose is to provide a high-level design framework around which to build our project Coffee Plantation Genie. It also provides a list of requirements against which to test the final project and determine whether we were able to successfully implement the system according to design.

Assemble all system as per circuit diagram. Program the NodeMCU using Arduino IDE. You will get confirmation on your screen once The NodeMCU is a programable controller which has inbuilt wi-fi module We connect three sensors 1) BMP180 2) DHT11 and 3) Rain Sensor to NodeMCU. By using these three sensors, we can collect the required weather data for monitoring purpose. This pooled data is stream over the Internet to display it or read it from anywhere. After the successfully programmed hardware, the NodeMCU get one IP address. We can browse this IP address from any of WEB browser like Chrome, Firefox, Internet Explorer etc.so we display the required live data which fetched by sensors in beautiful Graphical User Interface format. The weather parameters that we monitor are Temperature, Pressure, Humidity and Rain. Also, you can check whether data through anywhere using Internet as we hosted this server publicly. We developed an android application for easy access to our weather monitoring system.

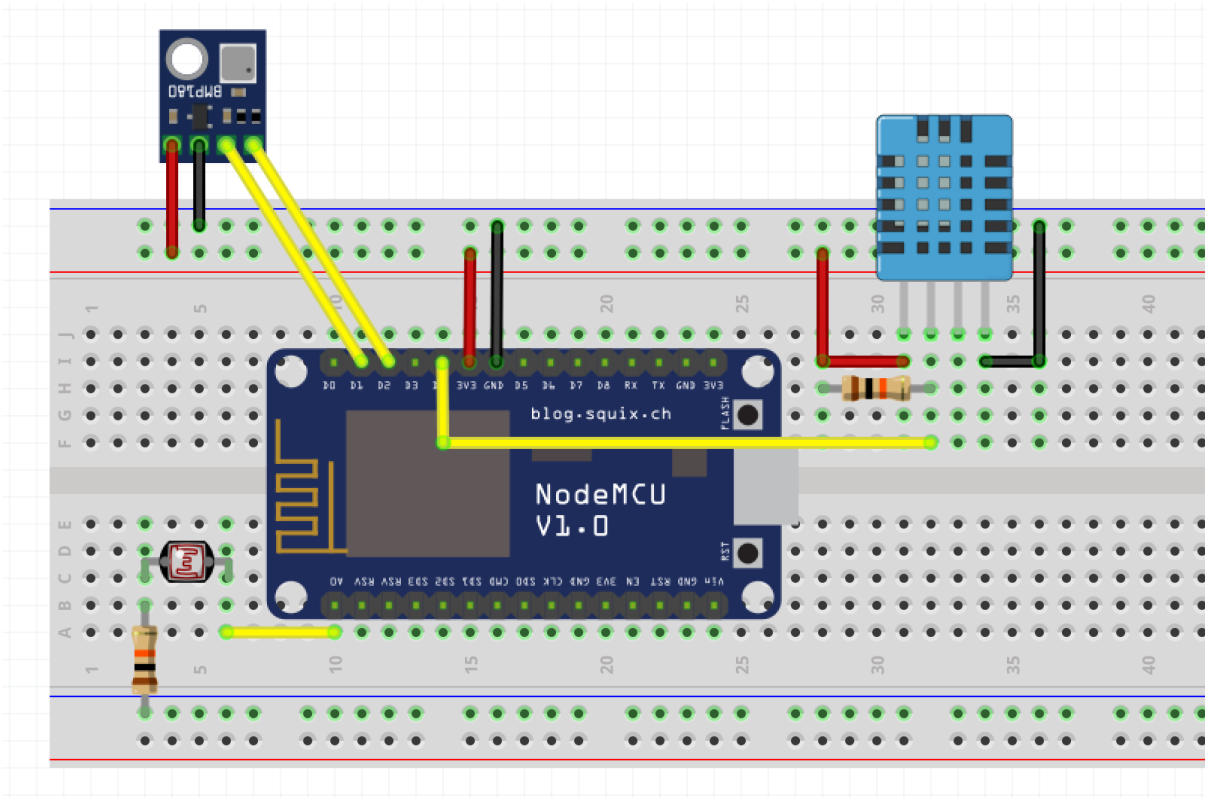


Scope

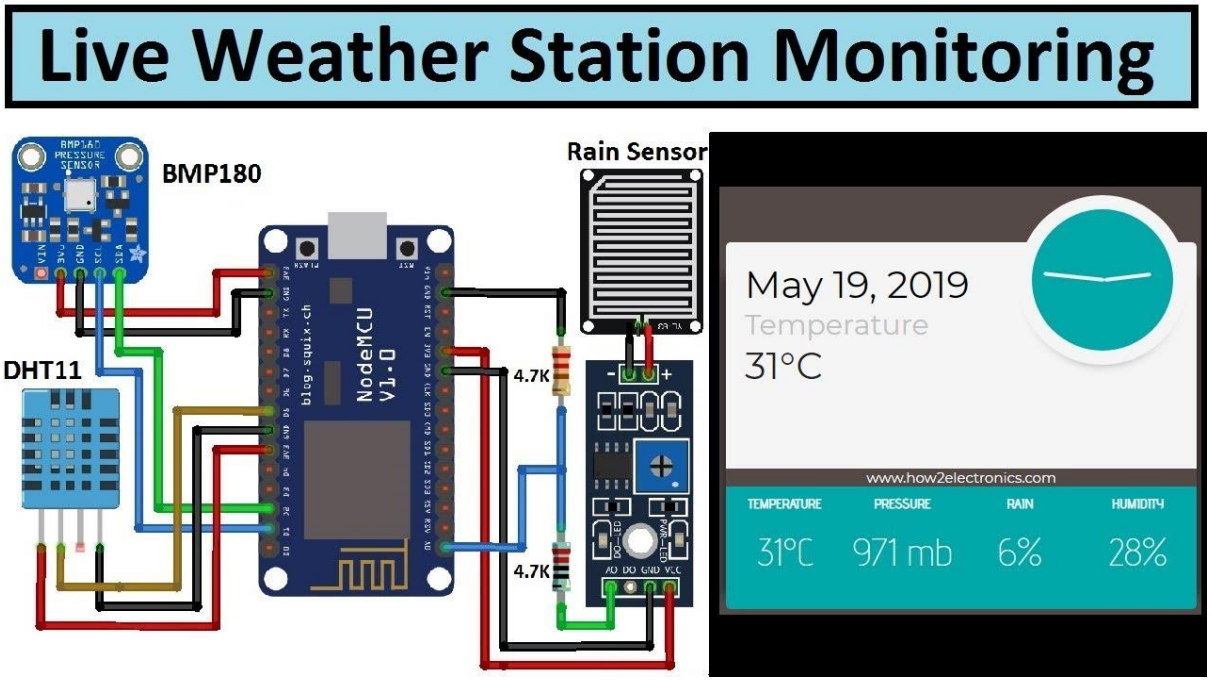
The system Design (SD) describes how the functional and non-functional requirements gathered in the requirement phase, preliminary user-oriented functional design transform into more technical system specifications from which the system is built. This phase describes the design goals and considerations, provides a high-level overview of the system architecture, and describes the data design associated with the human-machine interface and operational scenarios.

Overview

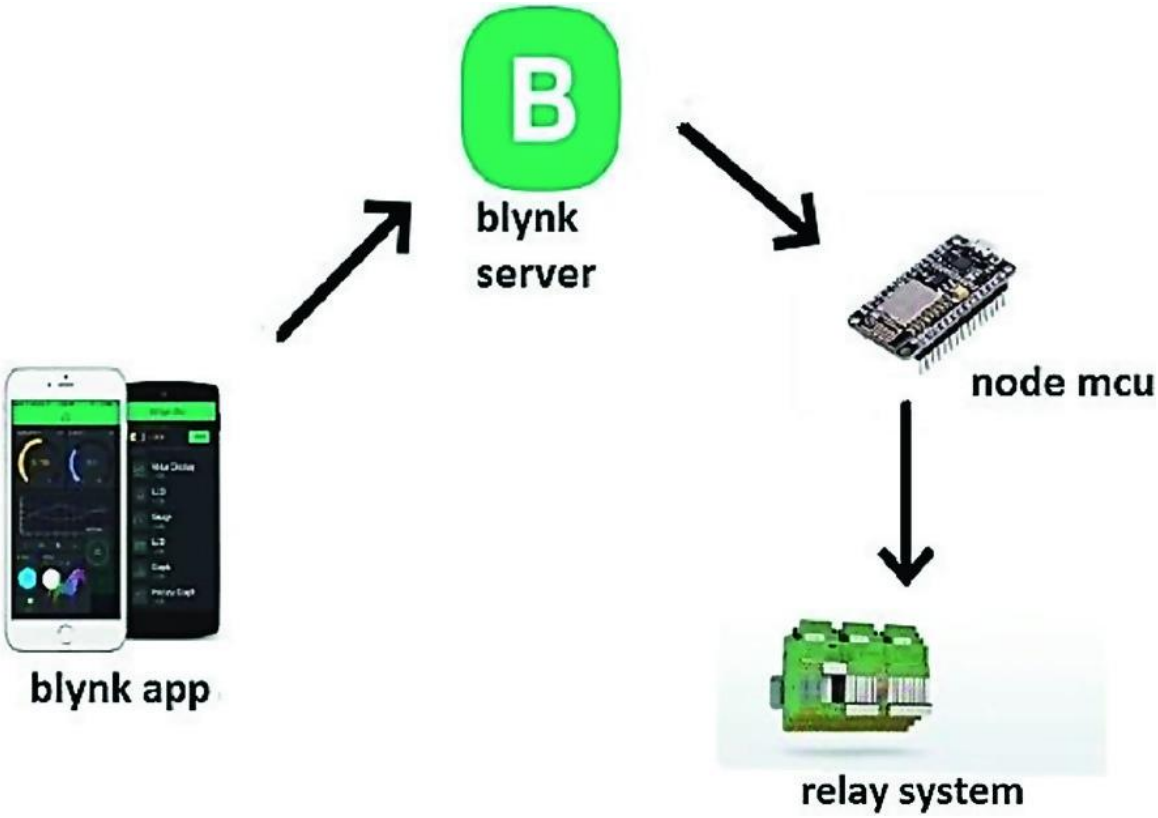
The system design documents and tracks the necessary information required to effectively define architecture and design of Learning application system in order to give the development team guidance on the architecture of the system to be developed. Design documents are incrementally and iteratively produced during the system development life cycle, based on the particular circumstances of the learning application project and the audience is the project manager, project team and development team.



Pin configuration



Citcuite Diagram


blynk
server
node mcu
blynk app
relay system

TESTING METHODOLOGIES:

Unit Testing:

During this testing the members of arguments are compared to input parameters, matching of parameters and arguments etc... It is also ensured whether the file attributes are correct, whether the files are opened before using, whether input/output are handled etc... Unit test is conducted using a test driver usually.

Integration Testing:

Bottom-up integration is used for this phase. It begins construction and testing with atomic modules. This strategy is implemented with the following steps.

1. Low-level modules are combined to form cluster that perform a specific software sub function.
2. The cluster is tested.
3. Drivers are removed and clusters are combined moving upward in the program structure.

Alpha Testing:

A series of acceptance tests were conducted. The end user conducts it. The suggestions, along with the additional requirement of the end users were included in the project.

Beta Testing:

It is to be conducted by the end user without the presence of the developer. It can be conducted over a period of weeks or month. Since it is a long-time consuming activity, its result is out of scope of this project report. But its result will help to enhance the product at the later time.

Validation:

At the completion of the integration testing, software is completely assembled as a package interfacing errors have been uncovered and corrected and a final series of software test begin in validation testing.

Validation testing can be defined in many ways, but a simple definition is that the validation succeeds when the software function in a manner that is expected by the customer. After validation test has been conducted as follows

a) The function or performance characteristics confirm to specification and are accepted.
b) A deviation from specification is uncovered and a deficiency list is created.
c) Proposed system under consideration has been tested by using validation test and found to be working satisfactory.

Output testing:

After performing validation testing, the next step is output testing of the proposed system, since no system could be useful if it does not produce the required output in a specific format. The output format on the screen is found to be correct. The format was designed in the system design time according to the user needs. For the hard copy also, the output comes as per the specified requirements by the user. Hence

User Acceptance Testing:

User acceptance of a system is the key factor for the success of any system. The system under consideration is tested for the user acceptance by constantly keeping in touch with the prospective system users at the time of developing and making changes whenever required.

Test causes with positive scenarios:

UNIT TESTING:

Login Page:

Test Case	Description	Expected Result	Observed Result
1	If the Login User Type is not selected	Error Message "Please Select Valid User Type" is displayed	Successful

2	If the Login Id /password is not entered	Error Message “Enter Valid Login Id /Enter Password” is displayed	Successful

TC No	Positive scenario	Required Input	Expected output	Actual output	Test Result
1	Test rain fall sensor woking propoerly	Perform rain fall sensor operation	Display rain fall result	As expected	Pass
2	Test temperature sensor woking propoerly	Perform temperature operation	Display temperature details	As expected	Pass
3	Test humidity sensor woking propoerly	Perform hummidity operation	Display humidity details	As expected,	Pass
4	Test soil moisture sensor woking propoerly	Perform soil moisture sensor operation	Display soil moisture details	As expected,	Pass
5	Check blink app connection	configure app connection	Connection successful	As expected,	Pass
6	Read values and diaply in app	Result should display in app	Result diplaying	As expected,	pass

Conclusion

This project entitles "Weather Monitoring Weather using Blynk" which attempt to monitor the weather at the city and also important for farmer. This project achieved the objectives where to build weather monitoring system that can check the weather conditions using application, Blynk. Next, the project also able to display the current weather conditions on weather monitoring system. The implementation of a system to monitor the weather using Internet of Things (IoT) is accomplished. The system provides a low power solution for monitoring weather and environment. The monitoring system has been tested in outdoor environment and successfully updated data from sensor. The data will be used for various type of analysis and it can be shared to other people or users. The project has the potential to be implemented for monitoring the developing cities and industrial zones especially for pollution monitoring. In order to protect the public health from pollution, the system also able to provide an efficient and low cost solution for the authority. It also suitable for continuous monitoring of environment in the future.

Future Scope

Present model can beupdated to monitor the cities and industries for pollution related data gathering. To shield the public health from pollution, model will provide an efficient and very cheaper solution for constant monitoring of environment and its conditions. We can do lots of additions in this system such as adding pressure sensor, gas sensor like CO, soil and moisture retrieving sensor which will able to tell us water content present in soil etc.

- Other sensors like soil moisture sensor, gas sensor, pressure measuring sensor can also be interfaced with existing system to get data about a particular place.
- In case of irrigation of plants or fields can be control by having moisture sensor we get information or data related presence of water content and will turn on or off the pump automatically.
- We can use this system as pollution monitoring system by adding gas sensor which will give information about toxicity level of gas present in our environment and that particular area.
- We can power the device by solar energy.

- We can use silica gel to minimise the condensation which effect sensors in positive manner.

References

1. Kamal Acharya. School management system project report. Authorea. August 01, 2024. DOI: https://doi.org/10.22541/au.172254873.34023165/v1

2. Kamal Acharya. A CASE STUDY OF CINEMA MANAGEMENT SYSTEM PROJECT. Authorea. August 01, 2024. DOI: https://doi.org/10.22541/au.172254873.30191075/v1

3. Kamal Acharya. A CASE STUDY ON ONLINE TICKET BOOKING SYSTEM PROJECT. Authorea. August 01, 2024. DOI: https://doi.org/10.22541/au.172254872.26972790/v1

4. Kamal Acharya. Web chatting application project report management system. Authorea. August 01, 2024. DOI: https://doi.org/10.22541/au.172254871.18588592/v1

5. Kamal Acharya. RETAIL STORE MANAGEMENT SYSTEM PROJECT REPORT. Authorea. August 01, 2024. DOI: https://doi.org/10.22541/au.172254871.14590154/v1

6. Kamal Acharya. SUPERMARKET MANAGEMENT SYSTEM PROJECT REPORT. Authorea. August 01, 2024. DOI: https://doi.org/10.22541/au.172252491.19145062/v1

7. Kamal Acharya. SOCIAL MEDIA MANAGEMENT SYSTEM PROJECT REPORT. Authorea. August 01, 2024. DOI: https://doi.org/10.22541/au.172252491.11210579/v1

8. Kamal Acharya. Online music portal management system project report. Authorea. August 01, 2024. DOI: https://doi.org/10.22541/au.172252488.89734698/v1

9. Kamal Acharya. COLLEGE BUS MANAGEMENT SYSTEM PROJECT REPORT. Authorea. July 31, 2024. DOI: https://doi.org/10.22541/au.172245277.70798942/v1

10. Kamal Acharya. AUTOMOBILE MANAGEMENT SYSTEM PROJECT REPORT. Authorea. July 31, 2024. DOI: https://doi.org/10.22541/au.172245276.67982593/v1

11. Kamal Acharya. Ludo management system project report. Authorea. July 31, 2024. DOI: https://doi.org/10.22541/au.172243999.98091616/v1

12. Kamal Acharya. Literature online quiz system project report. Authorea. July 31, 2024 DOI: https://doi.org/10.22541/au.172243825.53562953/v1

13. Kamal Acharya. Avoid waste management system project. Authorea. July 29, 2024. DOI: https://doi.org/10.22541/au.172228528.85022205/v1

14. Kamal Acharya. CHAT APPLICATION THROUGH CLIENT SERVER MANAGEMENT SYSTEM PROJECT. Authorea. July 29, 2024. DOI: https://doi.org/10.22541/au.172228527.74316529/v1

15. Acharya, Kamal, Online Job Portal Management System (May 5, 2024). Available at SSRN: https://ssrn.com/abstract=4817534 or *http://dx.doi.org/10.2139/ssrn.4817534*

16. Acharya, Kamal, Employee leave management system. (May 7, 2024). Available at SSRN: https://ssrn.com/abstract=4819626 or *http://dx.doi.org/10.2139/ssrn.4819626*

17. Acharya, Kamal, Online electricity billing project report. (May 7, 2024). Available at SSRN: https://ssrn.com/abstract=4819630 or *http://dx.doi.org/10.2139/ssrn.4819630*

18. Acharya, Kamal, POLICY MANAGEMENT SYSTEM PROJECT REPORT. (December 10, 2023). Available at SSRN: https://ssrn.com/abstract=4831694 or *http://dx.doi.org/10.2139/ssrn.4831694*

19. *Acharya, Kamal, Software testing for project report. (May 16, 2023). Available at SSRN: https://ssrn.com/abstract=4831028* or *http://dx.doi.org/10.2139/ssrn.4831028*

20. *Acharya, Kamal, ONLINE CRIME REPORTING SYSTEM PROJECT. (August 10, 2022). Available at SSRN: https://ssrn.com/abstract=4831015* or *http://dx.doi.org/10.2139/ssrn.4831015*

21. *Acharya, Kamal, Burger ordering system project report. (October 10, 2022). Available at SSRN: https://ssrn.com/abstract=4832704* or *http://dx.doi.org/10.2139/ssrn.4832704*

23. *Acharya, Kamal, Teachers Record Management System Project Report (December 10, 2023). Available at SSRN: https://ssrn.com/abstract=4833821* or *http://dx.doi.org/10.2139/ssrn.4833821*

23. *Acharya, Kamal, Dairy Management System Project Report (December 20, 2020). Available at SSRN: https://ssrn.com/abstract=4835231* or *http://dx.doi.org/10.2139/ssrn.4835231*

24. *Acharya, Kamal, Electrical Shop Management System Project (December 10, 2019). Available at SSRN: https://ssrn.com/abstract=4835238* or *http://dx.doi.org/10.2139/ssrn.4835238*

25. *Acharya, Kamal, Online book store management system project report. (Febuary 10, 2020). Available at SSRN: https://ssrn.com/abstract=4835277* or *http://dx.doi.org/10.2139/ssrn.4835277*

26. *Acharya, Kamal, Paint shop management system project report. (January 10, 2019). Available at SSRN: https://ssrn.com/abstract=4835441* or *http://dx.doi.org/10.2139/ssrn.4835441*

27. *Acharya, Kamal, Supermarket billing system project report. (August 10, 2021). Available at SSRN: https://ssrn.com/abstract=4835474* or *http://dx.doi.org/10.2139/ssrn.4835474*

28. *Acharya, Kamal, Online taxi booking system project report. (March 10, 2022). Available at SSRN: https://ssrn.com/abstract=4837729* or *http://dx.doi.org/10.2139/ssrn.4837729*

29. *Acharya, Kamal, Online car servicing system project report. (March 10, 2023). Available at SSRN: https://ssrn.com/abstract=4837832* or *http://dx.doi.org/10.2139/ssrn.4837832*

30. *Acharya, Kamal, School management system project report. (July 10, 2021). Available at SSRN: https://ssrn.com/abstract=4837837* or *http://dx.doi.org/10.2139/ssrn.4837837*

31. *Acharya, Kamal, Furniture Showroom Management System Project Report (March 21, 2021). Available at SSRN: https://ssrn.com/abstract=4839422* or *http://dx.doi.org/10.2139/ssrn.4839422*

32. *Acharya, Kamal, Online Vehicle Rental System Project Report (March 21, 2019). Available at SSRN: https://ssrn.com/abstract=4839429* or *http://dx.doi.org/10.2139/ssrn.4839429*

33. *Acharya, Kamal, Fruit Shop Management System Project Report (August 10, 2023). Available at SSRN: https://ssrn.com/abstract=4841048* or *http://dx.doi.org/10.2139/ssrn.4841048*

34. *Acharya, Kamal, Hall Booking Management System Project Report (December 21, 2023). Available at SSRN: https://ssrn.com/abstract=4841055* or *http://dx.doi.org/10.2139/ssrn.4841055*

35. *Acharya, Kamal, Lundry Management System Project Report (October 21, 2023). Available at SSRN: https://ssrn.com/abstract=4841059* or *http://dx.doi.org/10.2139/ssrn.4841059*

36. *Acharya, Kamal, A CASE STUDY OF CINEMA MANAGEMENT SYSTEM PROJECT (September 25, 2023). Available at SSRN: https://ssrn.com/abstract=4841209* or *http://dx.doi.org/10.2139/ssrn.4841209*

37. *Acharya, Kamal, A CASE STUDY ON ONLINE TICKET BOOKING SYSTEM PROJECT (May 25, 2024). Available at SSRN: https://ssrn.com/abstract=4841210* or *http://dx.doi.org/10.2139/ssrn.4841210*

38. *Acharya, Kamal, ONLINE DATING MANAGEMENT SYSTEM PROJECT REPORT. (April 25, 2023). Available at SSRN: https://ssrn.com/abstract=4842066 or http://dx.doi.org/10.2139/ssrn.4842066*

39. *Acharya, Kamal, ONLINE RESUME BUILDER MANAGEMENT SYSTEM PROJECT REPORT. (April 25, 2021). Available at SSRN: https://ssrn.com/abstract=4842071 or http://dx.doi.org/10.2139/ssrn.4842071*

40. *Acharya, Kamal, TOLL TEX MANAGEMENT SYSTEM PROJECT REPORT (August 21, 2023). Available at SSRN: https://ssrn.com/abstract=4842082 or http://dx.doi.org/10.2139/ssrn.4842082*

41. *Acharya, Kamal, Chat Application Through Client Server Management System Project Report (June 25, 2023). Available at SSRN: https://ssrn.com/abstract=4842761 or http://dx.doi.org/10.2139/ssrn.4842761*

42. *Acharya, Kamal, Web Chatting Application Management System Project Report (April 25, 2022). Available at SSRN: https://ssrn.com/abstract=4842771 or http://dx.doi.org/10.2139/ssrn.4842771*

43. *Acharya, Kamal, Automobile management system project report (May 25, 2022). Available at SSRN: https://ssrn.com/abstract=4846917 or http://dx.doi.org/10.2139/ssrn.4846917*

44. *Acharya, Kamal, College bus management system project report (April 25, 2023). Available at SSRN: https://ssrn.com/abstract=4846920 or http://dx.doi.org/10.2139/ssrn.4846920*

45. *Acharya, Kamal, Courier management system project report (May 25, 2023). Available at SSRN: https://ssrn.com/abstract=4846922 or http://dx.doi.org/10.2139/ssrn.4846922*

46. *Acharya, Kamal, Event management system project report (April 25, 2021). Available at SSRN: https://ssrn.com/abstract=4846927 or http://dx.doi.org/10.2139/ssrn.4846927*

47. *Acharya, Kamal, Library management system project report II (May 25, 2020). Available at SSRN: https://ssrn.com/abstract=4848857 or http://dx.doi.org/10.2139/ssrn.4848857*

48. *Kamal Acharya. Online directory management system project. Authorea. Jun 11, 2025 DOI: https://doi.org/10.22541/au.174965566.61058065/v1*